This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Previously presented) An unmanned helicopter for making a flight autonomously, the unmanned helicopter comprising:

altitude control device for giving a command of a collective pitch blade angle based on the deviation between a fed-back altitude and an altitude command and the deviation between a fed-back climb rate and a climb rate command;

position control device for performing position control based on the deviation between a fed-back position and a position command with respect to a horizontal position and the deviation between fed-back speed and a speed command;

attitude control device for performing attitude control of an airframe based on the deviation between a fed-back attitude angle and an attitude angle command; and

takeoff device, upon reception of a takeoff start command from the ground, for causing the airframe to take off and climbing the airframe to a first altitude while increasing the collective pitch blade angle without performing the altitude control of the altitude control device and then causing the altitude control device to start the altitude control.

2. (Original) The unmanned helicopter as in claim 1, wherein

the takeoff device suppresses the position control and the attitude control, when climbing the airframe to the first altitude.

3. (Previously presented) An unmanned helicopter for making a flight autonomously, the unmanned helicopter comprising:

altitude control device for controlling a collective pitch blade angle based on a blade angle command calculated based on the deviation between a fed-back altitude and an altitude command and the deviation between a fed-back descent rate and a descent rate command;

position control device for performing position control based on the deviation between a fed-back position and a position command with respect to a horizontal position and the deviation between fed-back speed and a speed command;

attitude control device for performing attitude control of an airframe based on the deviation between a fed-back attitude angle and an attitude angle command; and

descending device for stepwise changing descent rate command of the altitude control device for causing the airframe to descend to a second altitude and giving a descent rate command smaller than the descent rate command to the second altitude to the altitude control device for causing the airframe to descend from the second altitude to the ground.

4. (Original) The unmanned helicopter as in claim 3, wherein

the takeoff device suppresses the position control and the attitude control, when causing the airframe to descend from the second altitude to the ground.

5. (Previously presented) The unmanned helicopter as in claim 3, further comprising:

landing determination device for determining that the airframe lands if the blade angle command which is less than a predetermined value continues for a predetermined time.

6. (Currently amended) ~~A~~ An autonomous takeoff method of an unmanned helicopter comprising:

a first climbing step of climbing to a first altitude while increasing a climb rate by increasing a collective pitch blade angle command at a constant rate; and

a second climbing step of climbing while performing altitude control from the first altitude,

wherein the helicopter is autonomously controlled for takeoff.

7. (Original) The takeoff method of an unmanned helicopter as in claim 6, wherein

position control of an airframe on a horizontal plane and attitude control of the airframe are suppressed in the first climbing step.

8. (Currently amended) ~~A~~ An autonomous landing method of an unmanned helicopter comprising:

a first descending step of stepwise decreasing a descent rate and descending to a second altitude; and

a second descending step of descending from the second altitude to the ground at a descent rate smaller than the descent rate in the first step,

wherein the helicopter is autonomously controlled for descending to the ground.

9. (Original) The landing method of an unmanned helicopter as in claim 8, wherein

position control of an airframe on a horizontal plane and attitude control of the airframe are suppressed in the second descending step.

10. (Previously presented) A landing method of an unmanned helicopter comprising:

changing a collective pitch blade angle based on a blade angle command calculated based on the deviation between a fed-back altitude and an altitude command and the deviation between a fed-back altitude change rate and an altitude change rate command,

descending, and

determining that the helicopter lands, if the blade angle command of a predetermined value or less continues for a predetermined time.

11. (Currently amended) ~~A~~ An autonomous takeoff method of an unmanned helicopter comprising:

a first climbing step of climbing to a first altitude while increasing a climb rate without performing altitude control according to a fed back control based on a detected airframe altitude; and

a second climbing step of climbing while performing altitude control of the airframe from the first altitude,

wherein the helicopter is autonomously controlled for takeoff.

12. (Previously presented) The takeoff method of an unmanned helicopter as in claim 11, wherein position control of an airframe on a horizontal plane and attitude control of the airframe are suppressed in the first climbing step.

13. (New) The takeoff method of an unmanned helicopter as in claim 6, wherein the second climbing step is performed according to a fed back control based on a deviation between a fed-back altitude and an altitude command and a deviation between a fed-back altitude change rate and an altitude change rate command.

14. (New) The landing method of an unmanned helicopter as in claim 8, wherein the second descending step comprises the step of changing a collective pitch blade angle according to a fed back control based on a deviation between a fed-back altitude and an altitude command and a deviation between a fed-back altitude change rate and an altitude change rate command.

15. (New) The takeoff method of an unmanned helicopter as in claim 11, wherein the second climbing step is performed according to a fed back control based on a deviation between a fed-back altitude and an altitude command and a deviation between a fed-back altitude change rate and an altitude change rate command.

16. (New) The takeoff method of an unmanned helicopter as in claim 6, further comprising a hovering step of hovering at a target climb altitude reached in said second climbing step.

17. (New) The takeoff method of an unmanned helicopter as in claim 11, further comprising a hovering step of hovering at a target climb altitude reached in said second climbing step.